

## **EMERGENCY ACTION PLAN**

### **EAST FORK DAM**

City of Lewistown  
305 West Watson  
Lewistown, Montana 59457

June 1995

Revised: July, 2008

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\_\_\_\_\_  
\_\_\_\_\_

**If East Fork Dam is failing or failure seems imminent, call:**

Fergus County Sheriff ..... 535-3415 or 911

Fergus County Disaster and Emergency Services ..... 535-8118

Leo Kapp ..... Office: 535-1770  
..... Cell: 366-4430

## I. INTRODUCTION

### A. Purpose

The purpose of this emergency action plan (EAP) is primarily to safeguard lives and secondarily to reduce property damage to the citizens of Fergus County living near the town of Lewistown, and along Big Spring Creek, in the event of flooding caused by a failure of East Fork Dam.

### B. Description of Dam

East Fork Dam is in Fergus County, in Sections 11 and 14, Township 14 North (T14N), Range 19 East (R19E), and located on East Fork of Big Spring Creek, a tributary of the Judith River. It is owned by the City of Lewistown, 305 West Watson Street, Lewistown, MT 59457, (406) 535-1760. East Fork Dam is used for flood control, sedimentation and recreation purposes. Technical data pertaining to East Fork Dam and its structures are shown in Appendix A.

### C. Access to Dam

East Fork Dam is located off of a county road, about 13 miles Southeast of Lewistown. Note that the county road may become flooded! Alternate access may be obtained over land by all terrain vehicle (ATV), snowmobile, or from the air by helicopter. The nearest telephone is at a ranch ¼ mile down stream of the dam.

### D. Hazard Area

The evacuation area is shown in Appendix B. Hazards include the possible inundation of occupied dwellings and roads. Inundation and evacuation maps are in Appendix B.

### E. Responsibility and Authority

Pursuant to the Dam Safety Act, Chapter 15 of Title 85, MCA, the dam owner is responsible for production, coordination, maintenance, and implementation of this emergency action plan. The extent of owner implementation was defined through coordination of this plan with the County Sheriff and Disaster and Emergency Services (DES) coordinator.

### F. Periodic Review/Update

The owner shall review/update this EAP annually. Review/update by a qualified professional engineer will be accomplished as required by the dam's operating permit, but no less than every five years.

## II. NOTIFICATION PROCEDURES

### A. Imminent or Actual Failure

#### IF EAST FORK DAM IS FAILING, TWO THINGS MUST BE DONE IMMEDIATELY:

- (1) Residents in the hazard area downstream from the dam must be warned according to the county warning plan, and initiated as shown in Figure 1, and
- (2) any steps that might save the dam or reduce damage to the dam or hazard area downstream should be taken. (Refer to the map in Appendix B to determine the areas that are likely to be inundated if the dam fails).

As dam owner, it is your responsibility to:

1. Call the Sheriff's Dispatch Center (535-3415 or 911) and Disaster and Emergency Services (535-8118). Be sure to say, "This is an emergency." They will call other authorities and the media and begin the warning plan.
2. Warn anyone in immediate danger to evacuate to safety. This includes someone on the dam, directly below the dam, boating on the reservoir, or downstream evacuees, if so directed by the sheriff.
3. Contact the Disaster and Emergency Services staff at least once every hour. They may request your assistance in evacuating residents.
4. If all means of communication are lost:
  - a. Try to find out why
  - b. Get someone else to try to reestablish communications. If these means fail, take care of immediate problems and send someone to get to another radio or telephone that works

B. Potentially Hazardous Situation

A potentially hazardous situation is an event or condition not normally encountered in the routine operation of the dam and reservoir. Among the unusual occurrences that may affect the dam are dam embankment problems (see section B.2.), failure of the spillway or outlet works, heavy precipitation or rapid spring snow melt, landslides, earthquakes, erosion, theft, vandalism, acts of sabotage, and serious accidents. These occurrences may endanger the dam, the public, or the downstream valley and may necessitate a temporary or permanent revision of the dam's operating procedures. Help in these situations can be obtained by notifying those people shown in Figure 2.

1. If the dam owner discovers an unusual condition of the dam embankment that could threaten the structure:
  - a. Have a qualified engineer inspect the dam as soon as possible to determine whether emergency action is necessary.
  - b. Notify the county Disaster and Emergency Services Coordinator (535-8118) of the potential problem.
  - c. Contact the Dam Safety Program of the Department of Natural Resources and Conservation (DNRC).
2. Among the conditions the dam owner should watch for are:
  - a. Overtopping of the dam by floodwaters
  - b. Loss of material from the dam crest due to storm wave erosion
  - c. Slides on either the upstream or downstream slope of the embankment as evidenced by
    1. Sloughing
    2. Cracking
    3. Bulging
    4. Scarping
  - d. Erosional flows through, beneath, or around the embankment as evidenced by
    1. Excessive seepage
    2. Discoloration of the seepage
    3. Boils on the downstream side
    4. Sinkholes
    5. Changes in the flow from drains
  - e. Failure of outlets or spillways due to clogging or erosion
  - f. Movement of the dam on its foundation as evidenced by
    1. Misalignment
    2. Settlement
    3. Cracking
3. Before calling either an engineer or DNRC to report a problem, the dam owner shall use the form in Appendix D to ensure sufficient information is provided for the engineer to analyze the problems. After talking to the engineer, it may be helpful to document the condition of the dam by making a sketch on the form in Appendix D, showing the extent of the problem. Revise the sketch periodically if the problem develops further. Section III includes further guidelines for courses of action to take mitigate the effect of many problems.

C. Distribution of the EAP.

The Fergus County Sheriff's Office and DES Coordinator have copies of the plan. A complete plan distribution list is in Appendix E.

## SPILLWAYS

- a. Implement temporary measures to protect the damaged structure, such as closing an outlet or protecting a damaged spillway with riprap.
- b. Lower the water level to a safe elevation. If the outlet is inoperable, pumping, siphoning, or a controlled breach may be required.

## 6. MASS MOVEMENT OF THE DAM ON ITS FOUNDATION (SPREADING OR MASS SLIDING FAILURE)

- a. Immediately lower the water level until excessive movement stops.

## 7. EXCESSIVE SEEPAGE AND HIGH LEVEL SATURATION OF THE EMBANKMENT

- a. Lower the water to a safe level.
- b. Continue frequent monitoring for signs of slides, cracking or concentrated seepage.

## 8. SPILLWAY BACKCUTTING, THREATENING RESERVOIR EVACUATION

- a. Reduce the flow over the spillway by fully opening the main outlet.
- b. Provide temporary protection at the point of erosion by placing sandbags, riprap materials, or plastic sheets weighted with sandbags.
- c. When the inflow subsides, lower the water to a safe level.

## 9. EXCESSIVE SETTLEMENT OF THE EMBANKMENT

- a. Lower the water level by releasing it through the outlet pumping, siphoning, or a controlled breach.
- b. If necessary, restore freeboard, preferably by placing sandbags.

## B. Emergency Supplies and Resources

An emergency borrow area located on the east side of the dam is shown in Figure 3.

## C. Local Contractors and Engineers

### Local Contractors:

Casino Creek Concrete.....	538-7160
Century Construction.....	538-2334
Kodiak Concrete/Bridgeford Construction .....	538-3463

### Engineers:

NTL Engineering, Gary Quinn.....	761-6555
Morrison Maierle, Mark Franchi.....	442-3050



## APPENDIX A

### Technical Data for East Fork Dam

Max Reservoir Capacity to the Crest of the Dam: ..... 7150 acre feet  
Elev. = 4413.1 ft NGVD

Reservoir Capacity Measured to the Emergency Spillway Crest: ..... 5275 acre feet  
Elev. = 4405 ft NGVD

Normal Reservoir Capacity measured to the Principle Spillway Crest: ..... 1700 AF

Dam Height Measured from Streambed to Crest of the Dam: ..... 93 feet

Dam Crest Width: ..... 20 feet

Length of Dam Crest: ..... 2179 feet

Outlet Capacity: ..... 260 cubic feet per second

Spillway Capacity ..... 28,500 cubic feet per second

Date Constructed ..... Aug 1974, with drainage system modification completed in May 1976

Slope of Upstream Face of Dam (Horizontal to Vertical)

Upper: ..... 3:1

Lower: ..... 4:1

Slope of Downstream Face of Dam (Horizontal to Vertical):

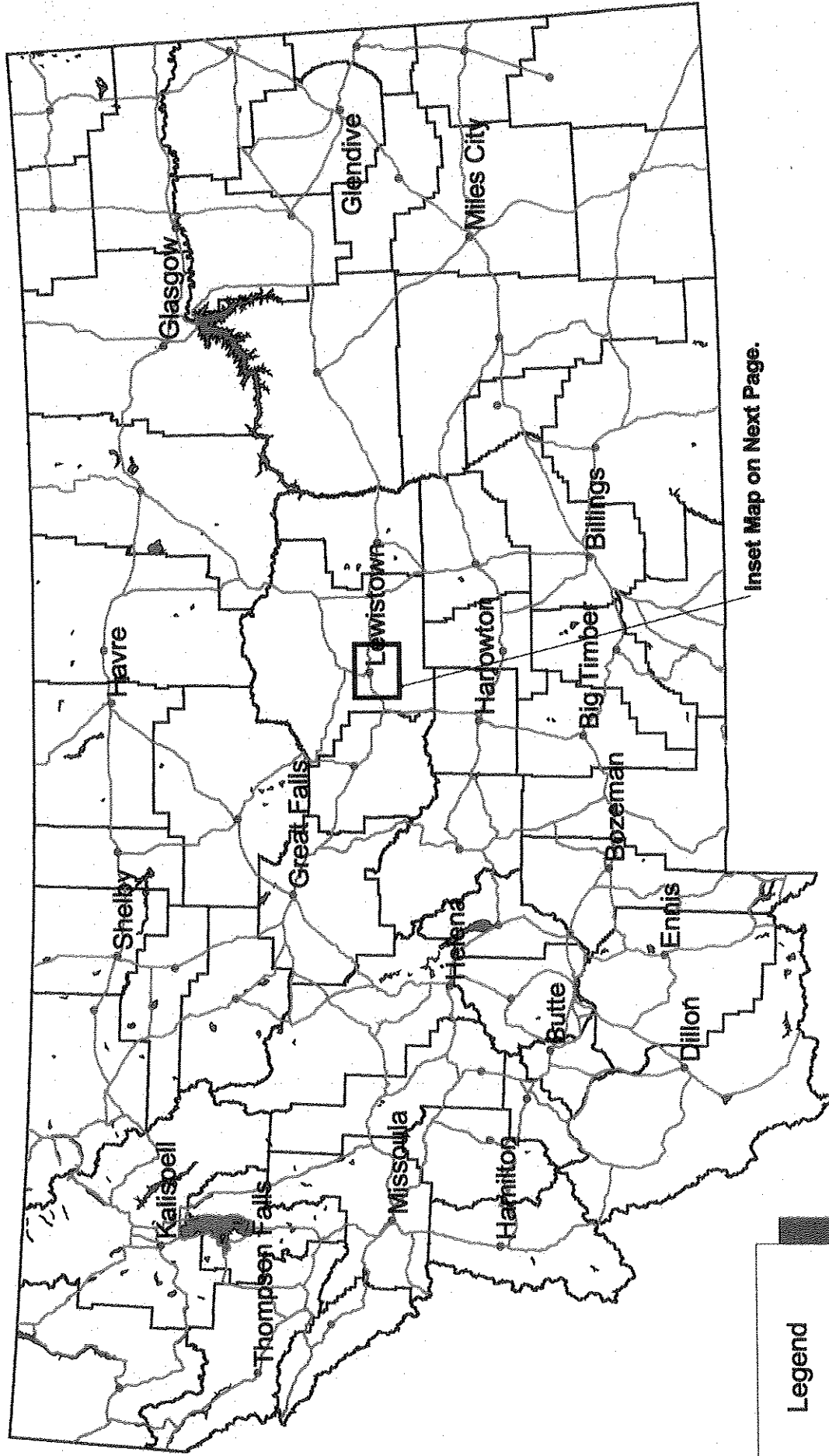
..... 2.5:1 from elev. 4405' to 4413'

..... 3:1 from elev. 4405' to the toe



# Lewistown Dams Overview Map

East Fork Lake, Pike Lake, Hanson, Lake, Big Casino Lake



Inset Map on Next Page.

Legend

• Cities

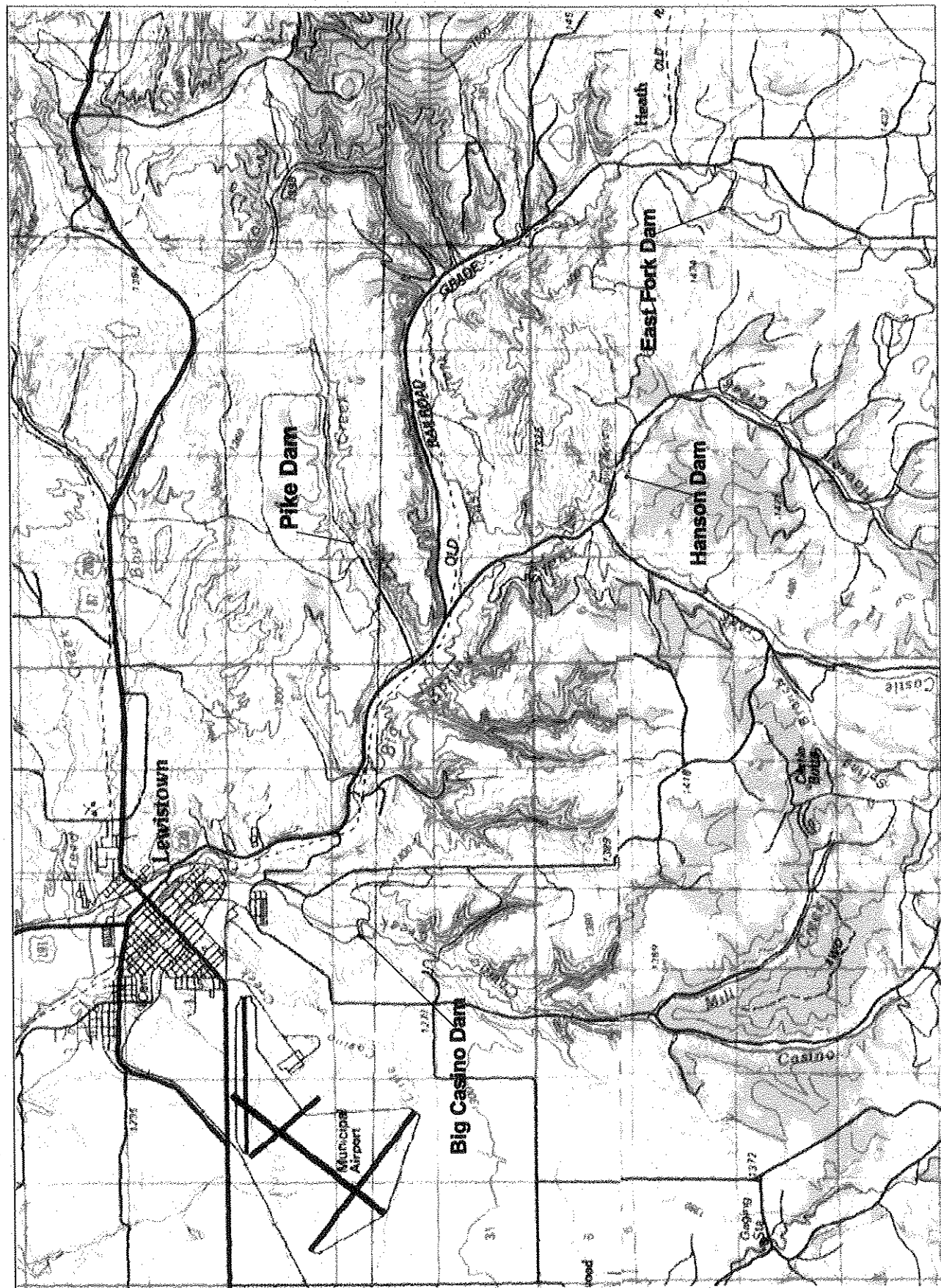
~ Highways

■ Lakes

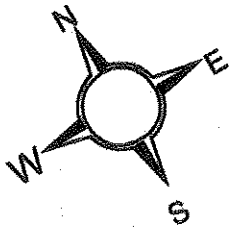
□ Counties

East Fork Lake, Pike Lake, Hanson, Lake, Big Casino Lake

East Fork Lake, Pike Lake, Hanson, Lake, Big Casino Lake



# Evacuation Photos for East Fork Reservoir



## Key



Inundation Area  
Cross-section

Photo 1 of 17

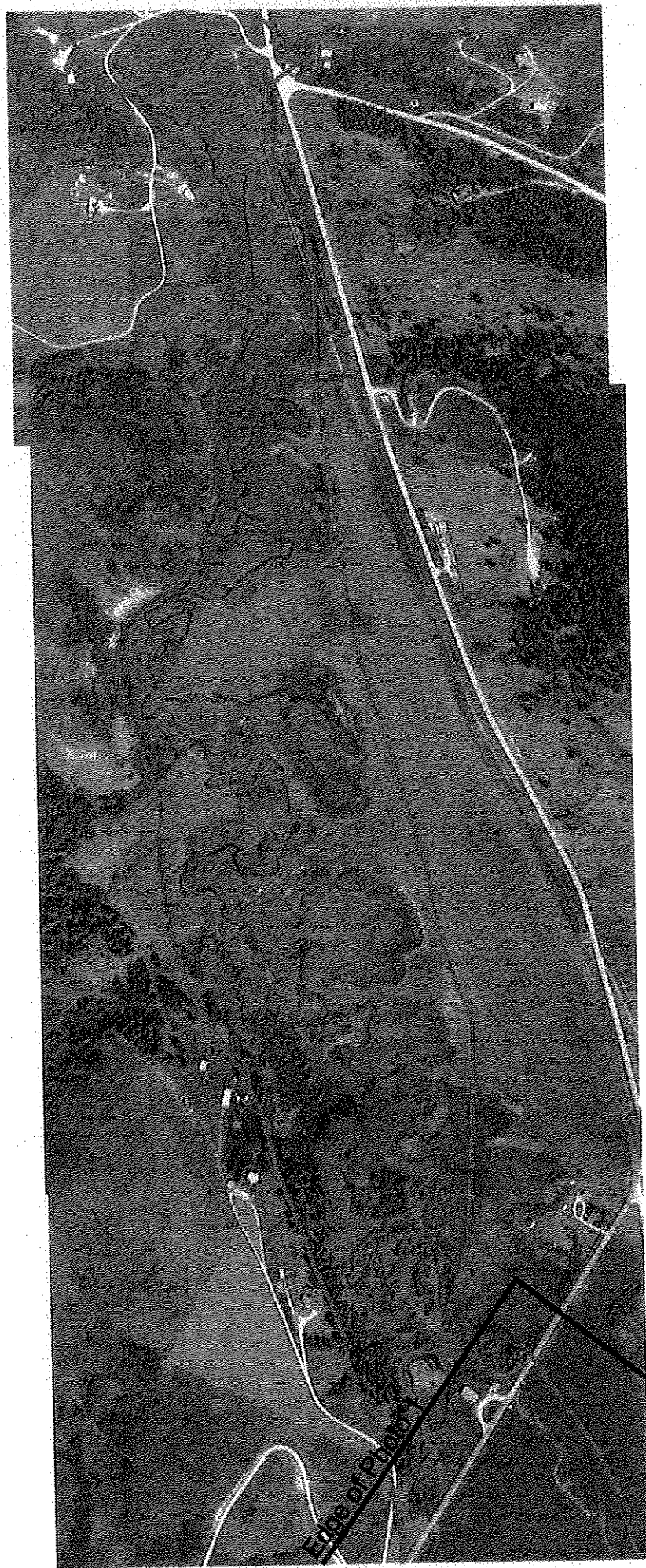
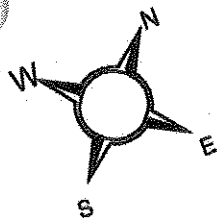
\* Inundation lines are estimates.  
Evacuations should be made well  
beyond this zone.

Approximate Scale: Photo = 1 1/2 mile

Inundation lines verified by \_\_\_\_\_ date \_\_\_\_\_



# Evacuation Photos for East Fork Reservoir



## Key

Inundation Area

Cross-section

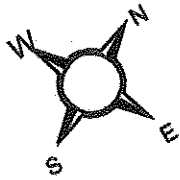


\* Inundation lines are estimates.  
Evacuations should be made well  
beyond this zone.

Photo 2 of 17

Approximate Scale: Photo = 1 1/2 mile

# Evacuation Photos for East Fork Reservoir



## Key

Inundation Area

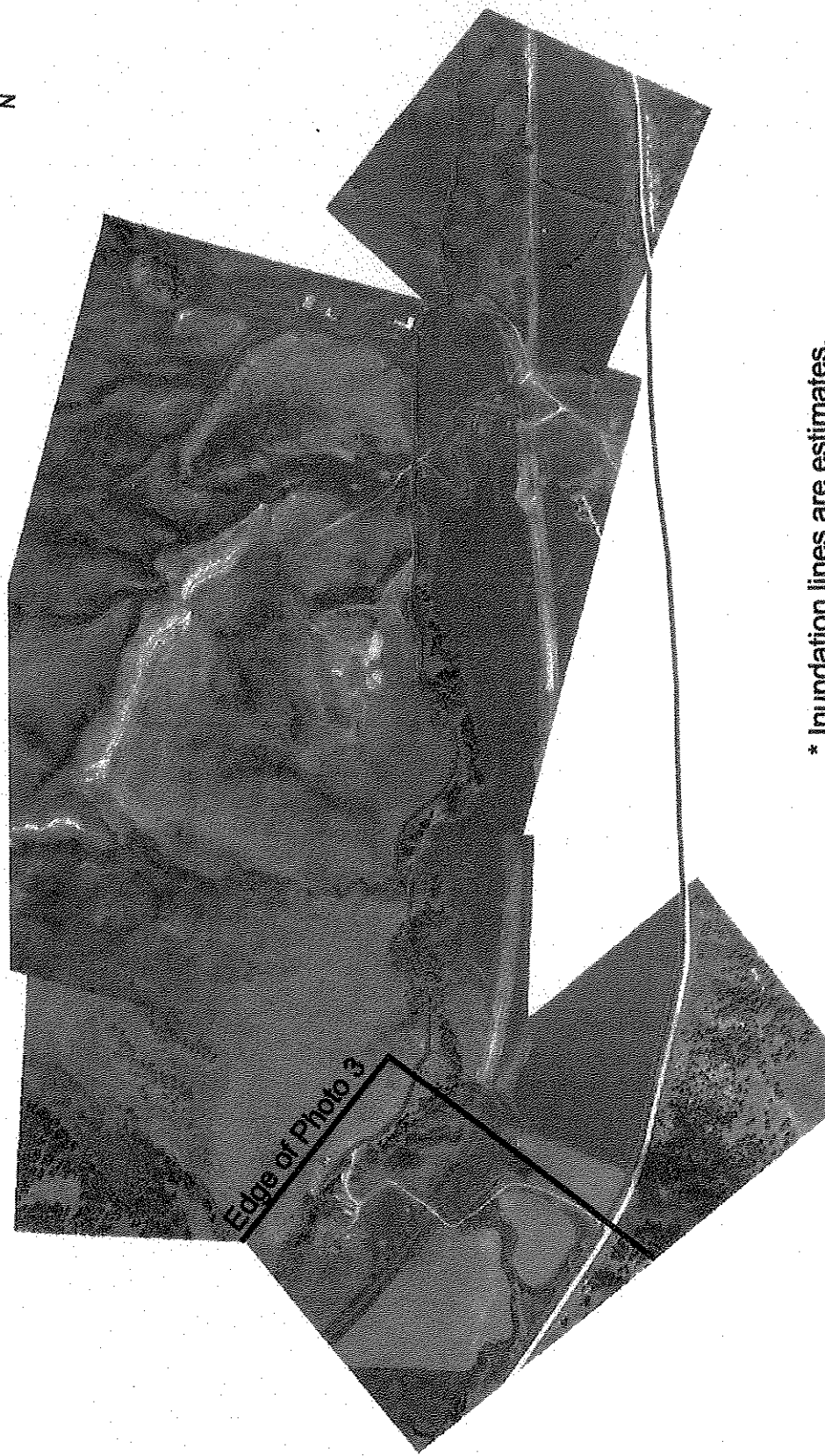
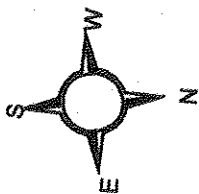
Cross-section

Photo 3 of 17

\* Inundation lines are estimates.  
Evacuations should be made well  
beyond this zone.

Approximate Scale: Photo = 1 1/2 mile

# Evacuation Photos for East Fork Reservoir



\* Inundation lines are estimates.  
Evacuations should be made well  
beyond this zone.

## Key

Inundation Area  
Cross-section

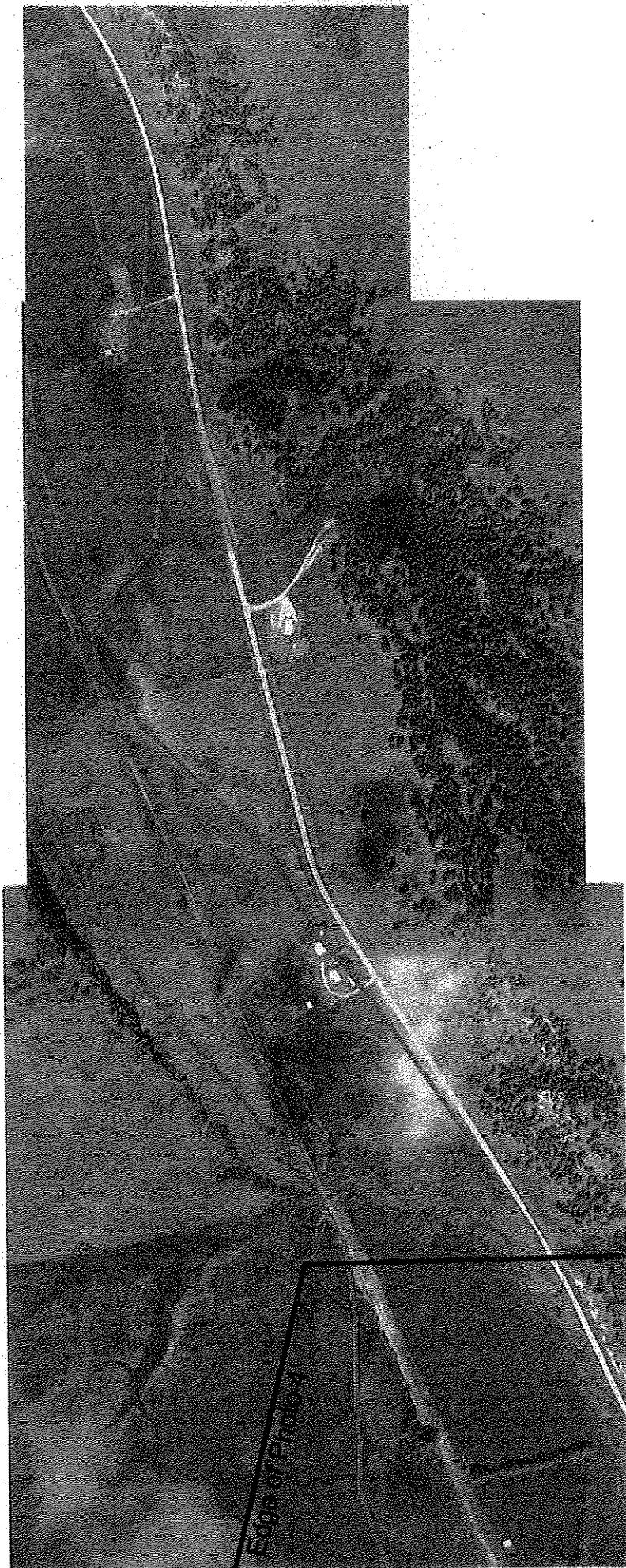
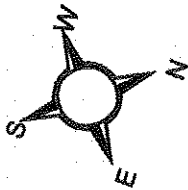


Photo 4 of 17

Approximate Scale: Photo = 1 mile



# Evacuation Photos for East Fork Reservoir



## Key



Inundation Area

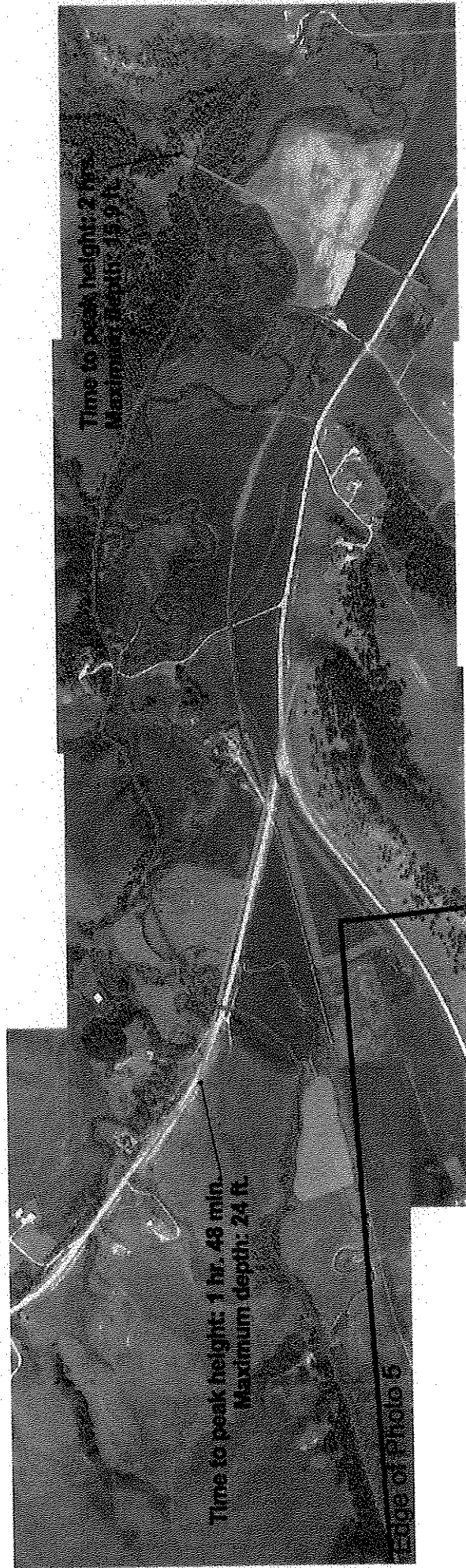
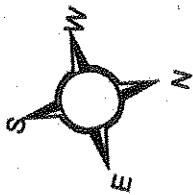
Cross-section

\* Inundation lines are estimates.  
Evacuations should be made well  
beyond this zone.

Photo 5 of 17

Approximate Scale: Photo = 1 1/2 mile

# Evacuation Photos for East Fork Reservoir



## Key

Inundation Area

Cross-section



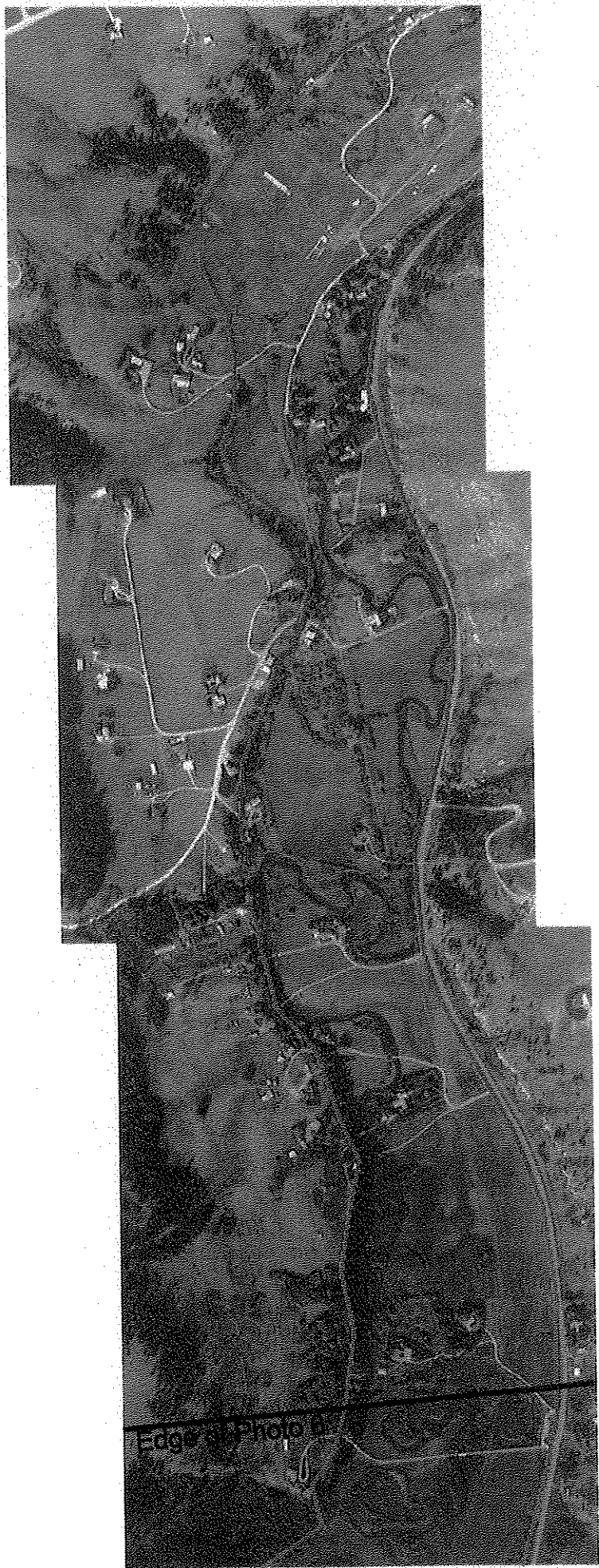
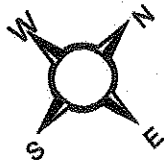
\* Inundation lines are estimates.  
Evacuations should be made well  
beyond this zone.

Photo 6 of 17

Approximate Scale: Photo = 1 1/2 mile



# Evacuation Photos for East Fork Reservoir



## Key



Photo 7 of 17

\* Inundation lines are estimates.  
Evacuations should be made well  
beyond this zone.

Approximate Scale: Photo = 2 miles

## East Fork Dam Exercise – March 3, 2011

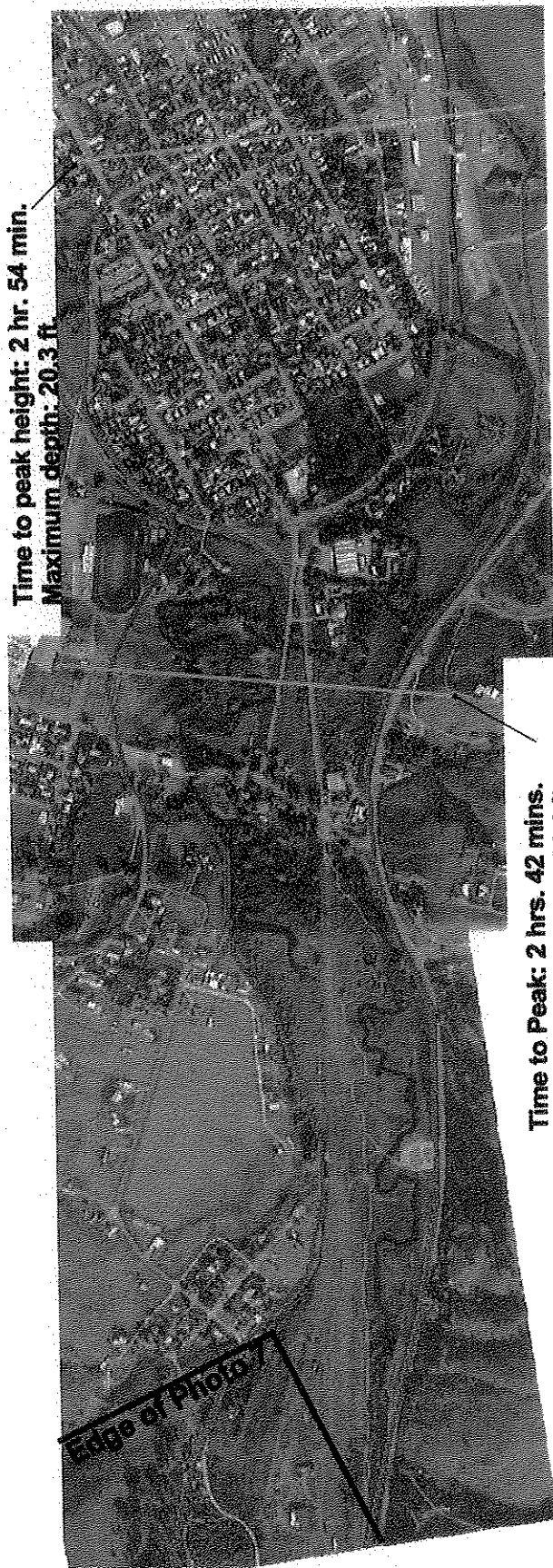
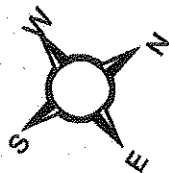
Proposed testing – Emergency Alert System, Evacuation, Dam Annex to Emergency Operations Plan, Communications

Although these are excellent testing items, some other items that need to be addressed either as part of this exercise or in planning and a subsequent exercise:

ITEM	AGENCY/PERSON RESPONSIBLE	COMMENTS
Time of day dam breaches?		Worst case scenario would be in the middle of the night – say 0200?
How high a wall of water at various locations downstream from the dam?		Graphically displayed at March 3 exercise ?
Who is the IC? Deputy IC		Work/rest needs
Who is doing what function- Command, Safety, Liaison, PIO, Plans, Operations, Logistics, Finance?		Work/rest needs
Any effect on Lewistown City Water System?		
Effect on drinking water wells?		
Would septic systems become unuseable?		How many residences?
Would Lewistown sewage treatment plant become unuseable?		
All timber bridges would likely be washed away – access to homes dependent on that access only?		
Anything not concrete would likely be washed away		
What permits/authority are needed to replace the bridges – 310 permit?; 404 permit? Emergency considerations?		Timing? Types of bridges? Private vs. public?
Houses would be washed off foundations		
Debris flow – trees, structures, mud, propane tanks, dead animals, bodies		
Injured people – how many? -where to handle		Temporary triage center?
Dead – how many? – where to handle		Temporary morgue?
Dead animals – how many? – where to dispose of?		
Is Lewistown Dispatch operational? – if not then Sheriff's office?		

Where is command center?		
Utility lines/phone down?		
Rescue equipment needs – heavy equipment – loaders, dump trucks, chainsaws & operators, helicopters?		Who pays?
Location to haul debris?		
Temporary living location/quarters for displaced families?		
Who is organizing county, city, private companies, individuals with equipment, people who just want to help?		
Radio frequency plan?		
County Emergency Declaration?		
2-mil levy invoked by County Commissioners?		
Who has authority to order equipment?		
Actual procedure to get additional support other than Fergus County resources?		
How long a time frame to returning to full recovery in Fergus County? – in Lewistown?		

# Evacuation Photos for East Fork Reservoir



## Key

Inundation Area

Cross-section

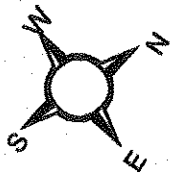


\* Inundation lines are estimates.  
Evacuations should be made well  
beyond this zone.

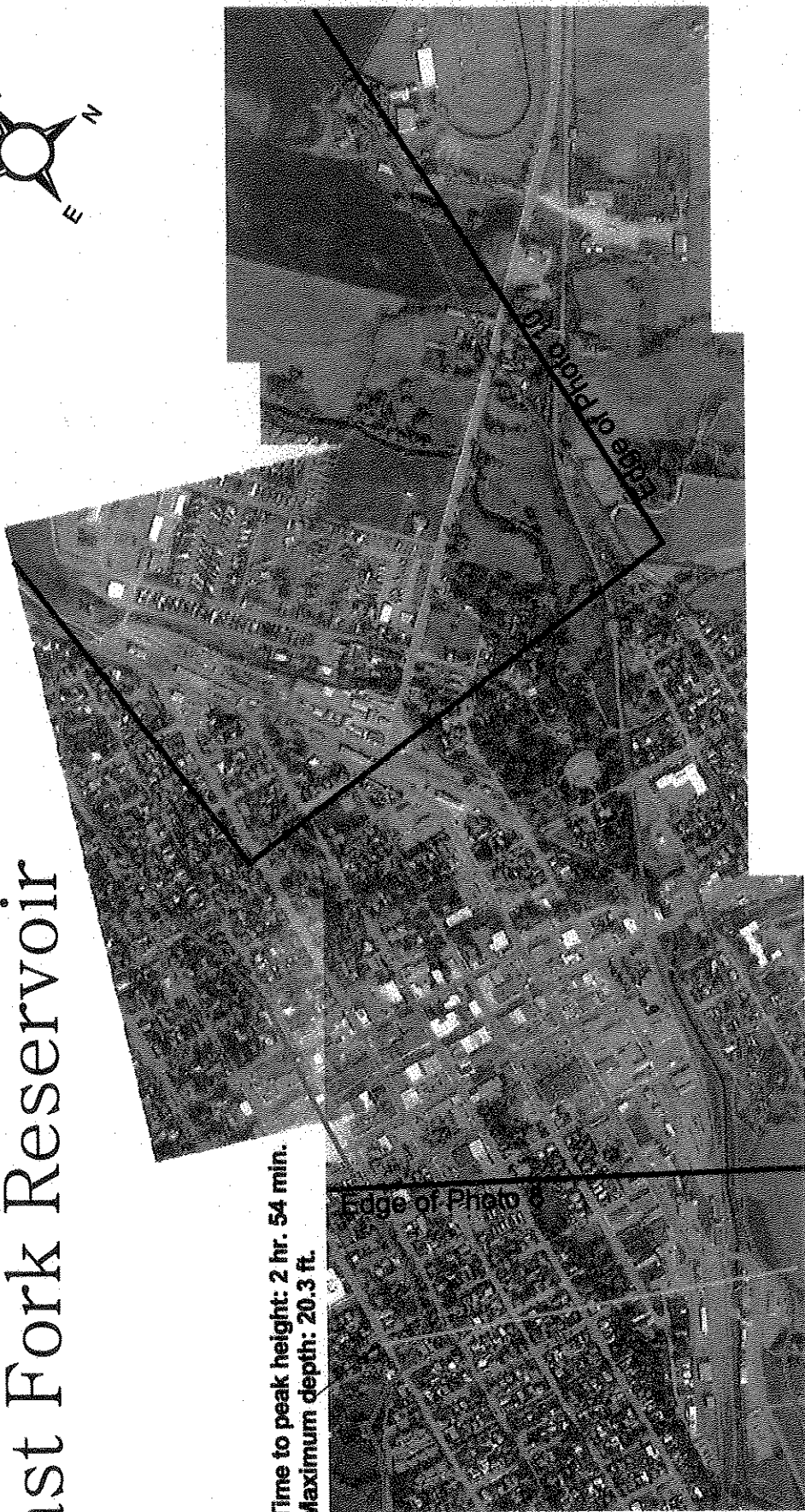
Photo 8 of 17

Approximate Scale: Photo = 1 1/2 mile

# Evacuation Photos for East Fork Reservoir



Time to peak height: 2 hr. 54 min.  
Maximum depth: 20.3 ft.



## Key



Inundation Area

Cross-section

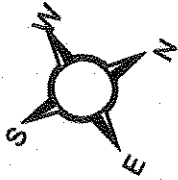
\* Inundation lines are estimates.  
Evacuations should be made well  
beyond this zone.

Photo 9 of 17

Approximate Scale: Photo = 1 1/2 mile



# Evacuation Photos for East Fork Reservoir



Time to peak height: 3 hr. 12 min.  
Maximum depth: 20.2 ft.



## Key

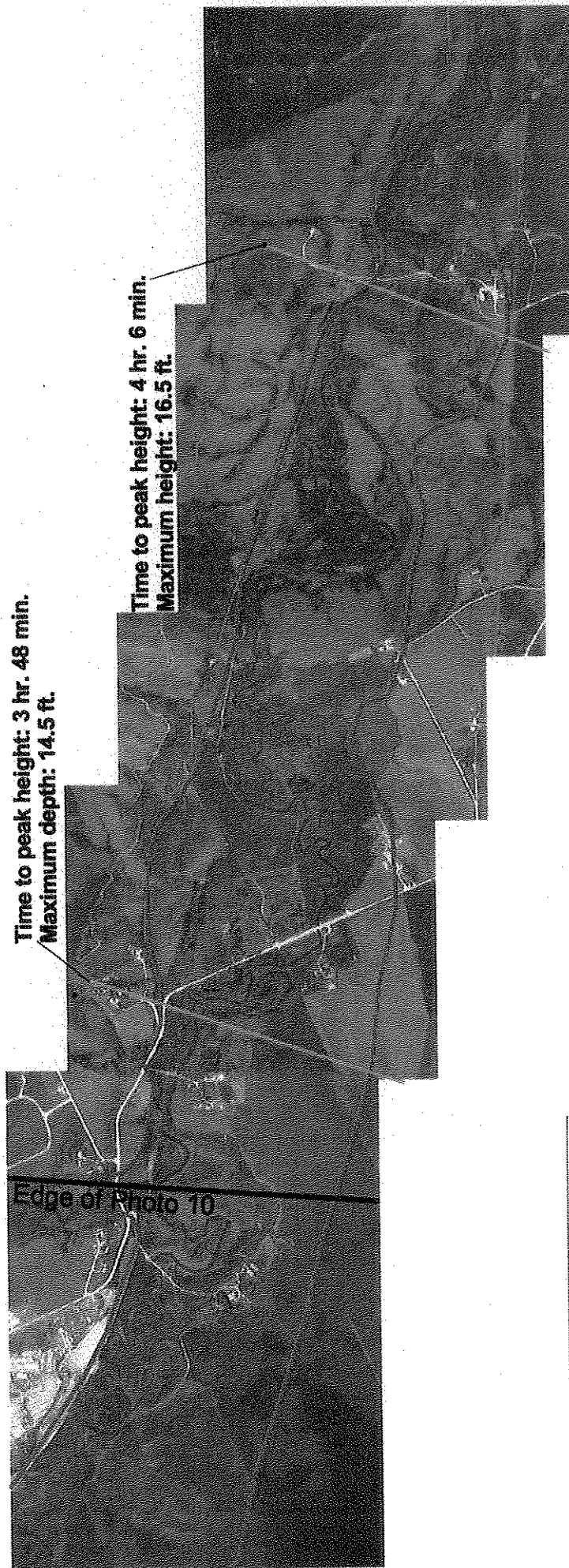
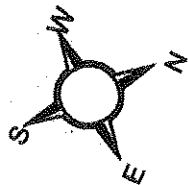
Inundation Area  
Cross-section

\* Inundation lines are estimates.  
Evacuations should be made well  
beyond this zone.

Photo 10 of 17

Approximate Scale: Photo = 1 mile

# Evacuation Photos for East Fork Reservoir



## Key

Inundation Area

Cross-section

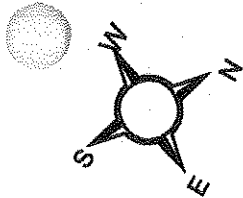


\* Inundation lines are estimates.  
Evacuations should be made well  
beyond this zone.

Photo 11 of 17

Approximate Scale: Photo = 2 1/2 mile

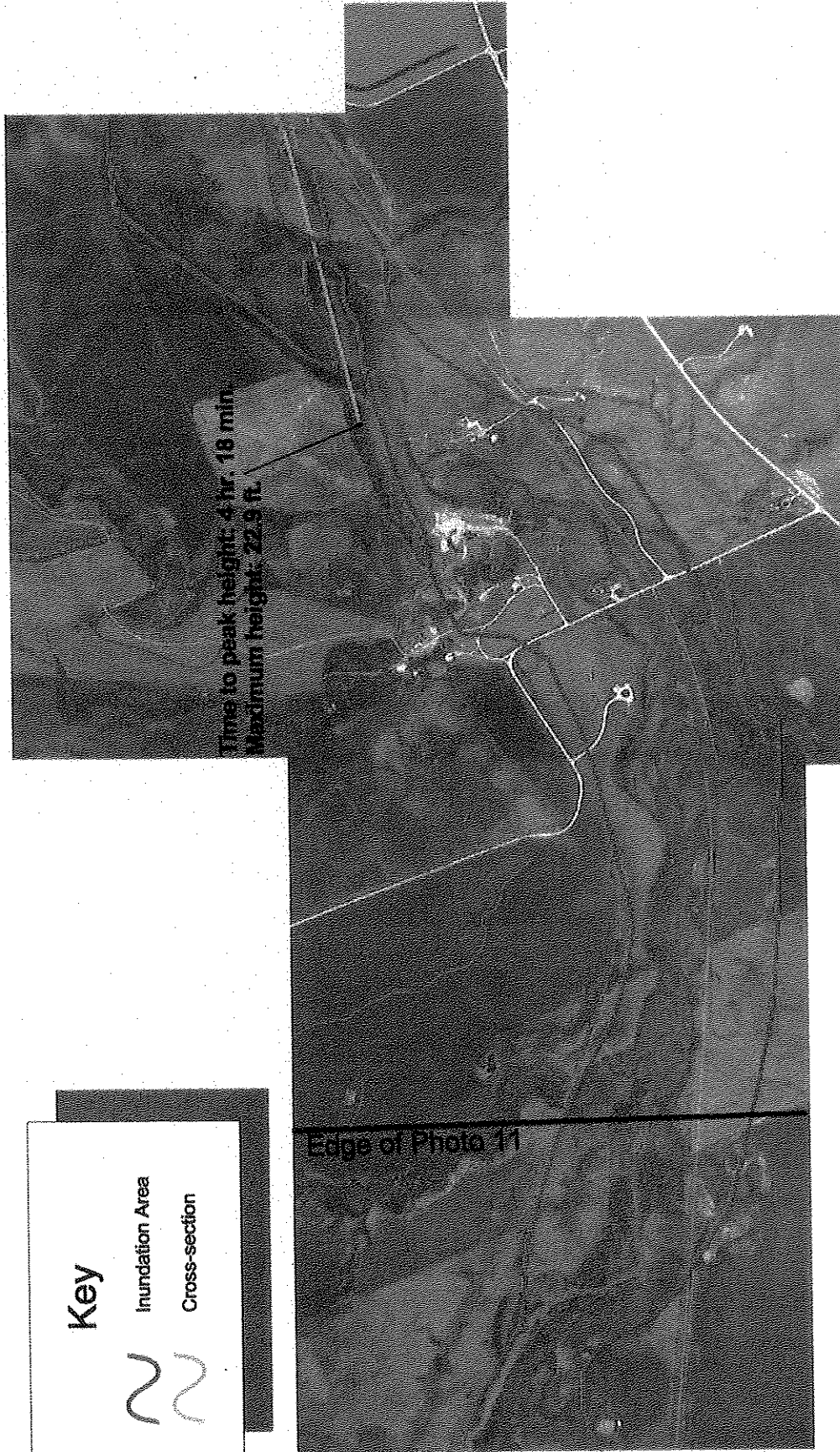
# Evacuation Photos for East Fork Reservoir



Key

Inundation Area

Cross-section



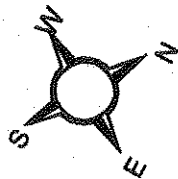
\* Inundation lines are estimates.  
Evacuations should be made well  
beyond this zone.

Photo 12 of 17

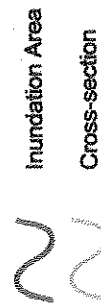
Approximate Scale: Photo = 1 1/2 mile



# Evacuation Photos for East Fork Reservoir



## Key

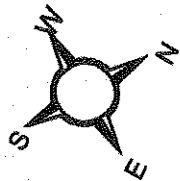


\* Inundation lines are estimates.  
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beyond this zone.

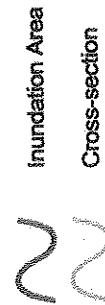
Photo 13 of 17

Approximate Scale: Photo = 1 1/2 mile

# Evacuation Photos for East Fork Reservoir



## Key

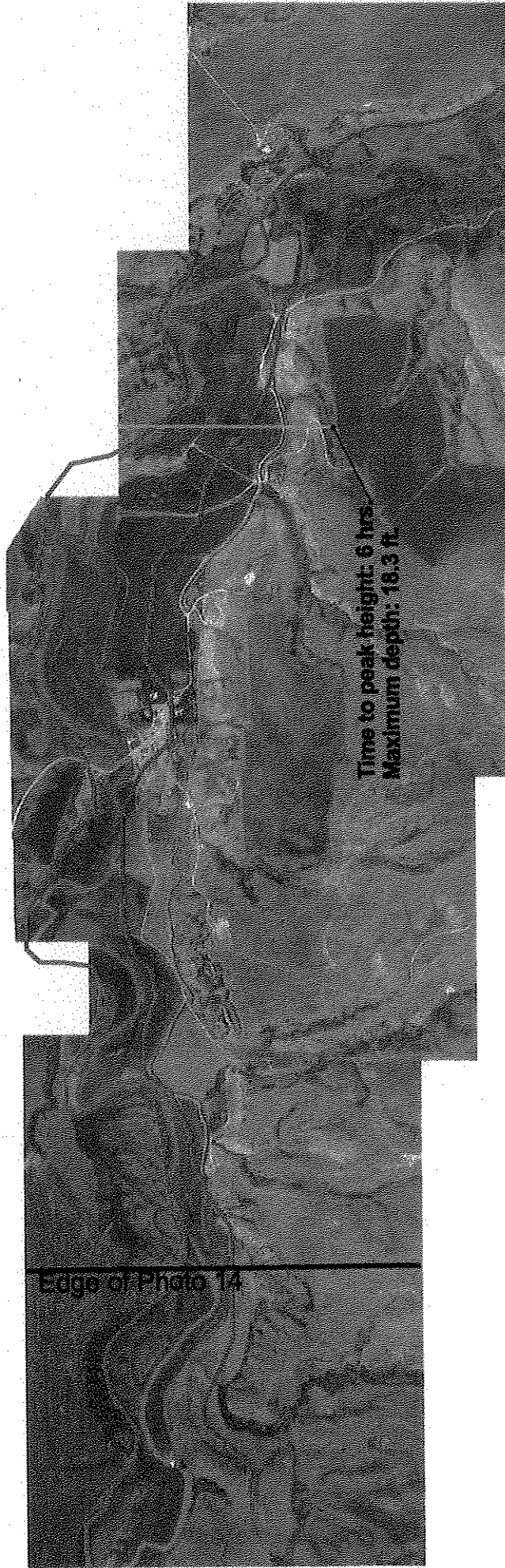
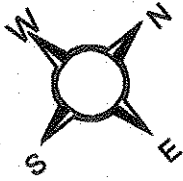


\* Inundation lines are estimates.  
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beyond this zone.

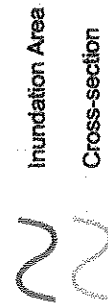
Photo 14 of 17

Approximate Scale: Photo = 2 1/2 mile

# Evacuation Photos for East Fork Reservoir



## Key



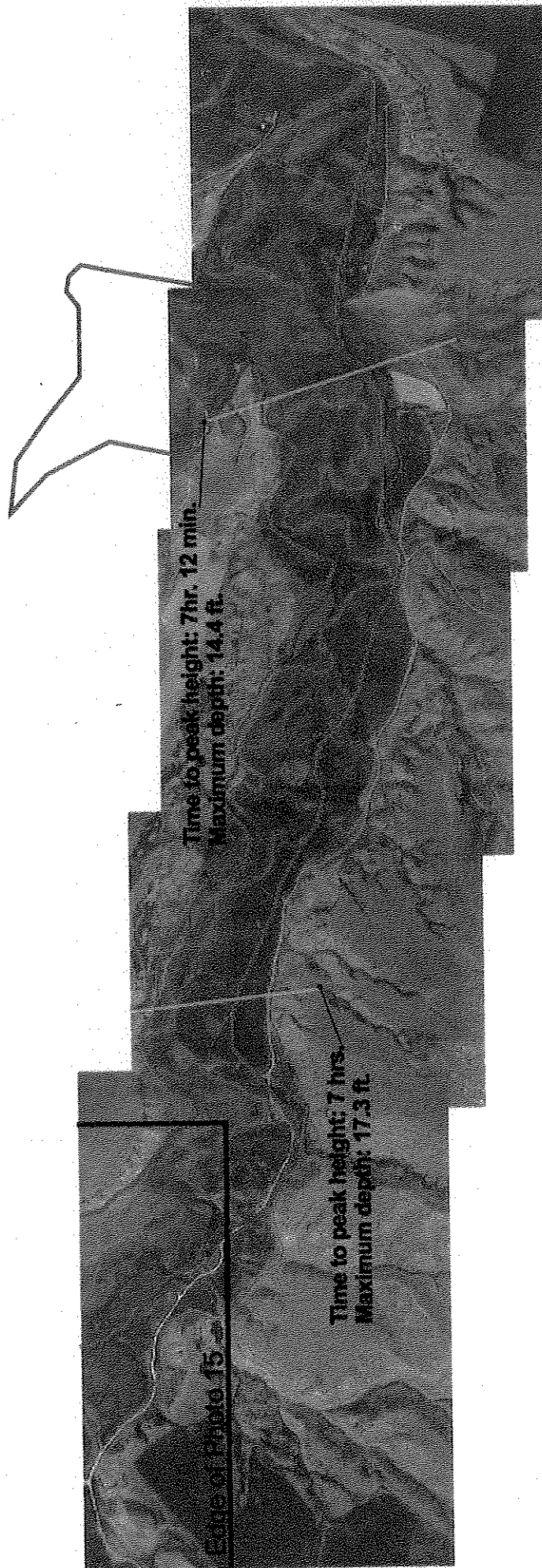
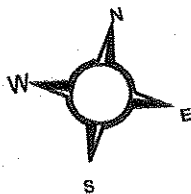
\* Inundation lines are estimates.  
Evacuations should be made well  
beyond this zone.

Photo 15 of 17

Approximate Scale: Photo = 2 miles



# Evacuation Photos for East Fork Reservoir



Edge of Photo 15

Time to peak height: 7 hrs.  
Maximum depth: 17.3 ft.

Time to peak height: 7 hr. 12 min.  
Maximum depth: 14.4 ft.

## Key



Inundation Area

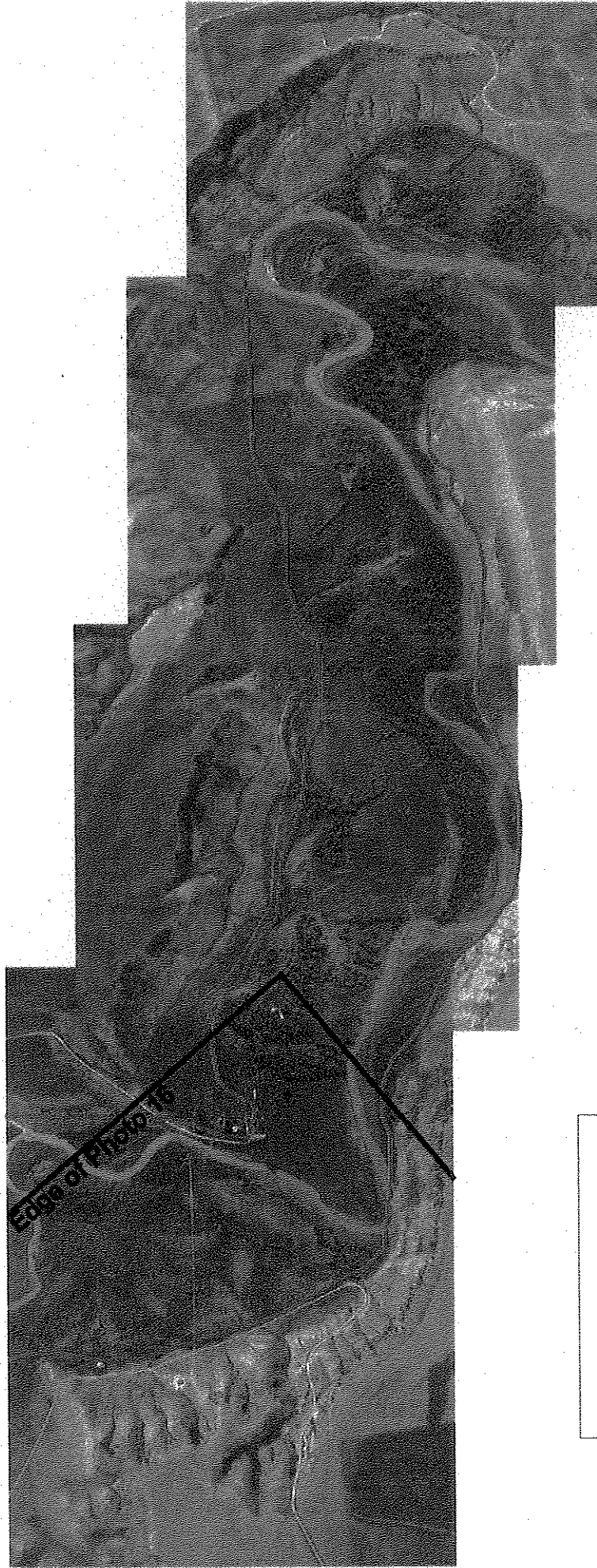
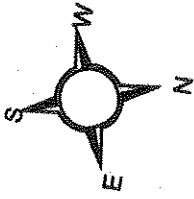
Cross-section

Photo 16 of 17

\* Inundation lines are estimates.  
Evacuations should be made well  
beyond this zone.

Approximate Scale: Photo = 2 1/2 mile

# Evacuation Photos for East Fork Reservoir



## Key



Inundation Area

Cross-section

Photo 17 of 17

\*Continued on East Fork Dam Map 1\*

Approximate Scale: Photo = 1 1/2 mile

\* Inundation lines are estimates.  
Evacuations should be made well  
beyond this zone.

# East Fork Dam



Inundation Area



Cross-section

Map 1 of 4



Inundation Areas are merely an estimate.  
Actual flood area may vary with conditions.  
Be sure to evacuate beyond suspected flood area.

Structures

Road Crossing  
at Highway 81

Time to Peak: 10 hrs. 6 mins.  
Max. Depth: 23.2 ft.

Time to Peak: 9hrs. 54 mins.  
Max. Depth: 10.2 ft.

Edge of Photo Coverage



0 1 2 3 4 Miles

# East Fork Dam



Inundation Area



Cross-section

Map 2 of 4



Inundation Areas are merely an estimate.  
Actual flood area may vary with conditions.  
Be sure to evacuate beyond suspected flood area.

Note: Beyond this point, the East Fork Dam clear-weather-breach flow falls below the 100-year flood level of the Judith River.

Time to Peak: 18 hrs. 48 mins.  
Max. Depth: 18 ft.

Time to Peak: 13 hrs. 48 mins.  
Max. Depth: 14.3 ft.



0.5 0 0.5 1 Miles



# East Fork Dam



Inundation Area



Cross-section

Map 3 of 4



Inundation Areas are merely an estimate.  
Actual flood area may vary with conditions.  
Be sure to evacuate beyond suspected flood area.

Time to Peak: 20 hrs. 54 mins.  
Max. Depth: 17.8 ft.

0.5 0 0.5 1 Miles





# East Fork Dam



Inundation Area



Cross-section



Map 4 of 4

Note: Beyond this point, the East Fork Dam storm-induced breach flow falls below the 100-year flood level of the Judith River.

Time to Peak: 34 hrs.  
Max. Depth: 9.7 ft.

Time to Peak: 26 hrs. 18 mins.  
Max. Depth: 11.7 ft.

Anderson Bridge

Time to Peak: 22 hrs. 18 mins.  
Max. Depth: 11.8 ft.

Inundation Areas are merely an estimate.  
Actual flood area may vary with conditions.  
Be sure to evacuate beyond suspected flood area.



0.5 0 0.5 1 Miles

# APPENDIX C

## Telephone Directory

Harry Felton	538-8422	51 Fox Farm Rd
Mitch Maycox	538-8536	61 Fox Farm Rd
Don Knox	538-8460	65 Fox Farm Rd
Don Knechtges	538-9515	206 Fox Farm Rd
Timothy Cablish	538-8438	264 Fox Farm Rd
Margaret Boyer	538-8697	322 Fox Farm Rd
Delbert Norton	538-3564	81 Chokecherry Ln
David McConnell	538-7307	122 Chokecherry Lane
William Cecil	538-4961	114 Chokecherry Lane
Donald Gregory	538-5747	2536 Upper Spring Creek Rd
Kenneth Wise	538-8629	62 Wise Lane
Ruth Wells		46 Wise Lane
Ted Manuel		17 Timberline Rd
Dale Huffine	535-3125	82 Hillview Ln
Bill Miller	538-7270	118 Hillview Ln
Doug Sereday	538-9370	249 Timberline Rd
Rose Hine	535-9863	310 Timberline Rd
Mike Otto	535-6650	276 Timberline Rd
Margaret Benes	538-6920	365 Timberline Rd
Max Hinderager	538-7648	374 Timberline Rd
Frank Martin	538-8609	86 Timberline Rd
JD Moore	538-8131	98 Timberline Rd
Frank Williams	535-2049	173 Timberline Rd
Edwin Durbin	538-7151	301 Pine Ridge Rd
Gregory Ray	538-2733	2156 Upper Spring Creek Rd
Ted Dirkson	538-5661	83 Willow Ln
Bill Haugen	538-3371	98 Willow Ln
Marion Gardner	538-7259	74 Willow Ln
Terry Bragg	538-9411	50 Willow Ln
Frank & Betty Martin		26 Willow Ln
William Leininger	538-2408	2000 Upper Spring Creek Rd
Corrine Trapp	535-6907	131 Dairy Dr.
Don Brown	538-5962	75 Dairy Dr
William Youngbauer	538-2138	49 Dairy Dr
Leroy Thomsen		1108 Roundhouse Rd
Helen Aldrich	538-8565	826 Roundhouse Rd
Wade Kurns	538-2484	780 Roundhouse Rd
Tim Harrell	538-9567	746 Roundhouse Rd
Vacant		740 Roundhouse Rd
Doug Peterschick	538-8870	1678 Upper Spring Creek Rd
Ed Schwartz	538-5725	619 Roundhouse Rd
Jack Boyce		61 Ash St
James Pearson	535-5352	68 Ash St
John Couch	535-2648	69 Ash St
Janice Weston	535-2454	1798 6 <sup>th</sup> Ave S

6. NATIONAL WEATHER SERVICE

Missoula ..... 329-4718

Great Falls ..... 453-9642

Billings ..... 652-2314

7. CITY OF LEWISTOWN

Leo Kapp ..... Office: 535-1770

..... Cell: 366-4430

8. BUREAU OF LAND MANAGEMENT ..... 657-6561

9. U.S. FOREST SERVICE ..... 329-3176

## **DAM INCIDENT REPORT FORM**

**DATE:**

**TIME:**

**NAME OF DAM:**

**STREAM NAME:**

**LOCATION:**

**COUNTY:**

**OBSERVER:**

**OBSERVER TELEPHONE:**

**NATURE OF PROBLEM:**

**LOCATION OF PROBLEM AREA (Looking Downstream):**

**EXTENT OF PROBLEM AREA:**

**FLOW QUANTITY AND COLOR:**

**WATER LEVEL IN RESERVOIR:**

**IS SITUATION WORSENING?**

**EMERGENCY STATUS:**

**CURRENT WEATHER CONDITIONS:**

**ADDITIONAL COMMENTS:**

# APPENDIX E

## Emergency Action Plan Distribution List

### PLAN HOLDER

### NUMBER OF COPIES

Dam Owner, City of Lewistown .....	2
Fergus County Sheriff .....	1
Fergus County DES Coordinator.....	1
DNRC Dam Safety Program .....	1
DNRC Lewistown Regional Office.....	1